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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/457,929 12/08/99 YAO

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IM62/0505
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EXAMINER

FIELER, E

ART UNIT

PAPER NUMBER

1763

DATE MAILED:

05/05/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/457,929

Applicant(s)
Yao et al.

Examiner
Erin Fielor

Group Art Unit
1763



- ☐ Responsive to communication(s) filed on _____.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-12 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-12 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☐ Notice of References Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Claim Rejections - 35 U.S.C. § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1-2 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by MacLeish et al. MacLeish teaches a CVD reactor comprising: a susceptor (50) with a linear downward sloping recessed portion (51b) and a flat bottom portion (51c), a substrate (52), where the substrate is supported by the recessed portion (51b) so that the substrate only contacts the susceptor at a minimal number of points along its edge, and a set of lift pins (54) for lifting the substrate off the susceptor (Fig. 2, 3B and col. 5 lines 6-20). MacLeish also teaches that part of the susceptor is made of graphite and another portion of the wafer support device, the lift pins, can be made of silicon carbide (col. 5 lines). Since silicon carbide is mentioned as a preferred

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material for the claimed invention, silicon carbide should have a coefficient of thermal expansion which falls within the range of claim 7 and a thermal conductivity in the range of claim 8.

Claim Rejections - 35 U.S.C. § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-6 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacLeish et al. MacLeish does not specify specific dimensions for the diameter, depth and recessed region angle, but it would be obvious to optimize the dimensions or modify them to accommodate different sized substrates.

It was held in *Gardner v. TEC Systems, Inc.* 725 F. 2d 1338, 220 USPQ 777 (Fed. Cir. 1984) , cert. Denied, 469 U.S. 830, 225 USPQ 232 (1984), by the Federal Circuit that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (Also see MPEP 2144.04 (d)).

6. Claims 3-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacLeish et al. in view of Chen et al. MacLeish teaches a substrate holder with all the limitations of the claims discussed above. MacLeish does not teach a detailed, size-specific structure for the susceptor.

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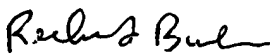
Chen teaches a substrate support comprising: ring-shaped susceptor (30), a holding surface (32) and a lip (34) for supporting the substrate, a beveled side of the substrate support ring (36), a flat top portion of the support ring (38), and bores (60, 62, 64 and 68) to allow the lift fingers to raise the substrate off of the susceptor (Fig. 2, 5 and col. 3 lines 32-48). In addition, Chen teaches that it is desirable to have an aluminum nitride coating on the susceptor because aluminum nitride has a preferable coefficient of thermal expansion and conductivity (col. 4 lines 11-53). Chen also teaches that the susceptor may be formatted to hold a 200mm substrate for one embodiment, but the dimensions of the substrate support structure will vary depending on the substrate and process being performed (col. 3 lines 41-63). It would have been obvious to one skilled in the art to combine the teachings of MacLeish and Chen because Chen teaches that a susceptor, similar to MacLeish's invention, can be made more resistant to thermal processing by coating the susceptor in aluminum nitride and rounding the edges of the susceptor lip (abstract).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. No. 4,986,215 by Yamada et al.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin Fieler, whose telephone number is (703) 305-0516 .

EF

May 4, 2000


RICHARD BUEKER
PRIMARY EXAMINER
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